



*World-class, operationally relevant  
health and medical research solutions - anytime, anywhere!*

# NAVAL MEDICAL RESEARCH AND DEVELOPMENT STRATEGIC PLAN

MARCH 2008



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## EXECUTIVE SUMMARY

With a legacy of outstanding science, agility, and innovation, Naval Medical Research and Development (NMR&D) has proudly accomplished its mission – conducting health and medical research, development, testing, evaluation, and surveillance to enhance the operational readiness and performance of DoD personnel worldwide – for over sixty years. It is critical for NMR&D to build on that legacy, to remain capable of accomplishing that mission, and to achieve its vision – world-class, operationally relevant health and medical research solutions anytime, anywhere! – in the years ahead.

NMR&D has completed a six-month period of long-range strategic planning, based on Lean Six Sigma principles. Our aim was to assess and improve our current position, with a focus on how we could best meet the needs of and create value for our customers for the next three to five years, ensuring continued alignment with Navy, Marine Corps, and Navy Medicine. This Strategic Plan is the result of that initiative, outlining key strategic themes and providing related objectives and initiatives (see page 11, Table 2, and Appendices B and C), that will enable NMR&D to remain a premier research organization.

Our Core Strategic Theme is that “NMR&D will create value (improve readiness and future capability) for Sea Enterprise by conducting relevant human-centered warfighter research, development, testing, and evaluation (RDT&E), and identifying and mitigating medical threats to our Warfighters.” Given the experiences of DoD personnel in the current battlegrounds of Afghanistan and Iraq, some of our highest priority research objectives will be to further enhance Navy Medicine’s ability to address the numerous injuries and stresses resulting from the “signature weapon” of those battlegrounds – blast – and to further optimize warfighter resilience and performance in all environments and across all platforms. We will also aim to achieve significant gains in healing and rehabilitating wounded warriors and their families in areas ranging from wound healing to limb prosthetics to craniofacial implants.

Numerous other research and surveillance objectives and initiatives are included in this plan. However, given that our ability to predict the future is limited, we believe it is even more critical for NMR&D to sustain and enhance our ability to respond with speed and agility to whatever operationally relevant health and medical challenges lie ahead – to be ready for “the next big thing.” Our Enabling Strategic Themes were developed with this reality and this purpose in mind. Enabling themes include the areas of fiscal (“Diversify and increase sources of funding”) and human (“Attract, reward, develop, and retain staff of highest caliber”) resources, organizational structure (“Develop an efficient, effective and adaptable organization”), best business practices (“Apply Lean Six Sigma principles to implement effective and efficient processes to deliver Customer Value”), and influence (“Shape the research environment to preserve and enhance our ability to improve the health and safety of our Warfighters”).

Although metrics of NMR&D’s success will include measures of products, prestige, and partnerships, ultimately the success of our efforts will be judged on whether they positively impact one or more of the six Warfighter Enterprises that together comprise the Navy and Marine Corps “Sea Enterprise.” We look forward to working with our outstanding staff and with our Customers, Stakeholders, and Partners, to implement this Strategic Plan and achieve our vision.





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## ACKNOWLEDGMENTS

I would like to thank all those who contributed to this Naval Medical Research and Development Strategic Plan. This initiative could not have succeeded without the input of our Customers (Warfighters, sponsors, and other stakeholders), who provided honest feedback on the quality, relevance, and timeliness of our work. Our Science Leaders and our Laboratory Commanders represented the Voice of the Employee and joined us in taking a thoughtful, introspective look at NMR&D. We received tremendous support from our friends at General Dynamics Information Technology, who coordinated the entire process for us, including four sets of meetings, and ensured that the results of our deliberations would be captured in this document. I would be remiss if I did not thank Dr. Andrew Blair, our Black Belt Strategic Planning Consultant, and the members of our Core Strategic Planning Team, who invested a considerable amount of time and brain power to help develop the “road map” for the way ahead:

CAPT (Ret) Steve Ahlers, MSC, USN

CDR Charmagne Beckett, MC, USN

Ms. Cheryl Carr

RDML Marshall E. Cusic, MC, USNR

Dr. Jill Czarnecki

CAPT Vincent DeInnocentiis, MSC, USN

Dr. Frank Garland

Dr. Jerry Lamb

CAPT (Ret) Steve Madey, USN

CAPT (Ret) Steve Walz, MSC, USN

Last, and certainly not least, I am deeply indebted to and inspired by over 1300 dedicated scientists, technicians, engineers, and administrative professionals, who together comprise Navy Medicine’s global research enterprise and whose efforts not only “enhance the operational readiness and performance of DoD personnel worldwide” but also advance the health and safety of our fellow citizens around the world.

Very Respectfully,

A handwritten signature in black ink, reading "J. Daniel".

CAPT J. Christopher Daniel, MC, USN



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## NAVAL MEDICAL RESEARCH AND DEVELOPMENT STRATEGIC PLAN

### INTRODUCTION

Naval Medical Research and Development's (NMR&D) mission is to conduct health and medical research, development, testing, evaluation (RDT&E), and surveillance to enhance the operational readiness and performance of DoD personnel worldwide. We are a premier research organization of over 1300 dedicated employees with a unified vision: world-class, operationally relevant health and medical research solutions – anytime, anywhere! We have demonstrated competitive advantages in biomedical technology fields in which other medical R&D organizations cannot sustain superior performance. These fields include the ability to develop products that are Naval-unique; those that have a unique Naval application; and those that are essential, though not unique, to our Navy, Marine Corps, DoD, and/or our nation, but which can be most efficiently developed by a command with an empowering Naval culture. Through the day-to-day accomplishment of our mission in collaboration with and enhanced by our numerous military



**NAMRU-3 researchers in Libya discuss a culture.**



**NMR&D researcher examines cultures.**

and civilian partners in the United States, South and Central America, Eastern Europe, Africa, the Middle East, the Central Asian Republics, and Southeast Asia, we are proud to contribute directly to our National Maritime Strategy and to the priorities of our Navy Surgeon General.

NMR&D has completed a six-month period of long-range strategic planning. Based on Lean Six Sigma principles, this initiative focused on how we could best meet the needs of and create value for our customers for the next three to five years. Our objective was to establish a foundation for future NMR&D plans, programs, and operations (a “road map”), ensuring continued alignment with the Navy, Marine Corps, and Navy Medicine.

Our initiative began with two all-day “Voice of the Customer” sessions at the Naval Medical Research Center (NMRC). They were followed by workshops with a Core Team of senior and mid-grade uniformed and civilian

leaders currently serving and/or with experience in seven of our ten laboratories, as well as by separate workshops for our Scientific Leaders and Lab Commanders. These workshops were



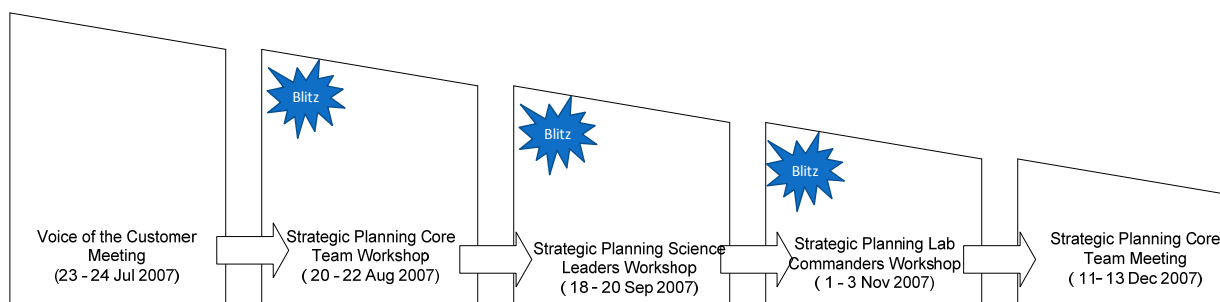
conducted as a series of (Kaizen) Blitzes (in Lean Six Sigma terminology), making use of existing information to focus and accelerate the Define, Measure, Analyze, and Improve cycles for better results, as displayed in Table 1.

**Table 1. Strategic Planning Blitz Outline**

DEFINE	MEASURE	ANALYZE	IMPROVE
Mission Vision Process Review Voice of the Customer Kano Analysis Stakeholder Analysis	Drivers Decision Criteria Constraints Issues Quality Function Deployment	Aggregate Prioritize SWOT <sup>1</sup> Analysis Strategies	Objectives Measures Goals Barriers Initiatives Milestones Risk Management Balanced Scorecard

<sup>1</sup>SWOT - Strengths Weaknesses Opportunities Threats

Each succeeding Workshop developed and refined a set of objectives, measures, goals, milestones, and initiatives to accomplish our core and enabling strategic themes. This was in response to the needs generated by customers and key stakeholders and to the mission and vision of NMR&D to face the challenges ahead (an overview of our strategic planning process is shown in Figure 1 and further detailed in Appendix A). A sincere attempt has been made to involve the entire workforce in developing this initiative and to achieve consensus on the way forward.



**Figure 1. NMR&D Strategic Planning Process Overview**

Our work continues as we move to implementation. We are confident that, among our Lab Commanders and senior leaders, there exists consensus and a willingness to lead the way on undertaking the initiatives that will move us forward. We are proud to be out in front for Navy Medicine and committed to creating value for Sea Enterprise and the entire Navy and Marine Corps team by improving readiness and enhancing future capabilities through our vital work in support of Navy, Marine Corps, and joint US Warfighters.





## BACKGROUND

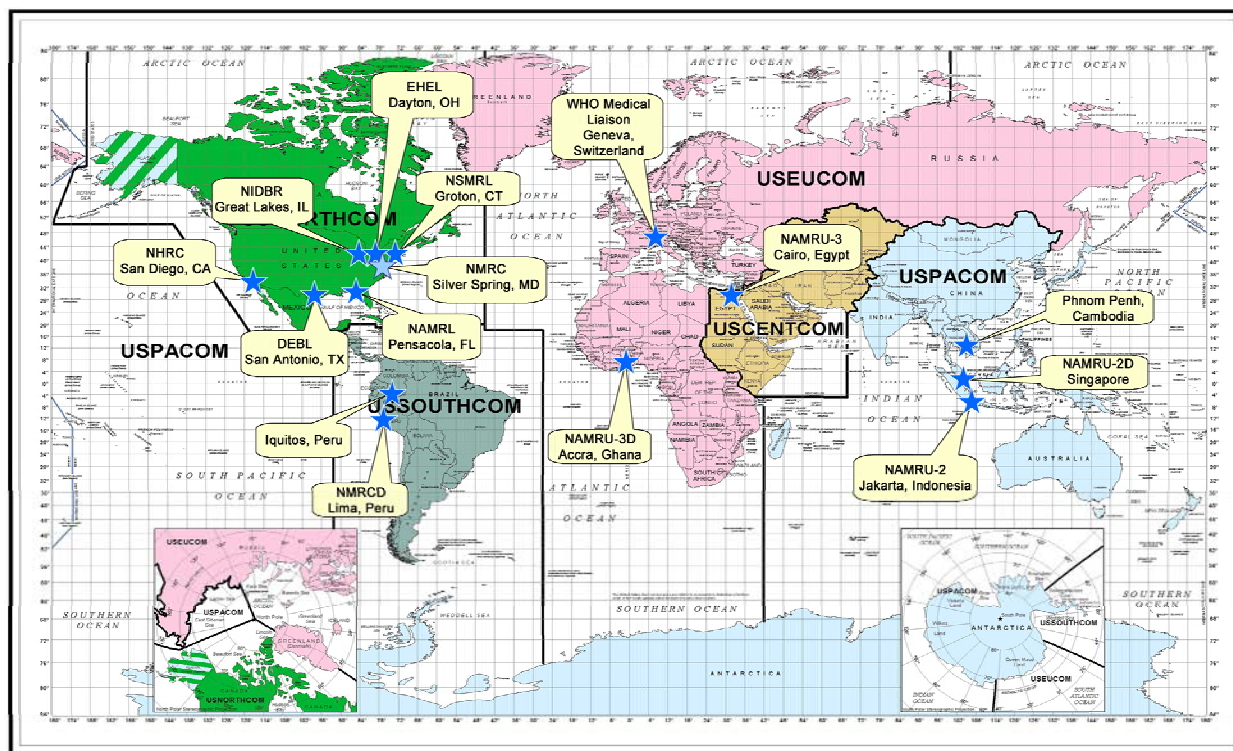
There are currently ten primary laboratories in the NMR&D Enterprise (Figure 2). The Naval Medical Research Center, Silver Spring, Maryland, is a major research execution laboratory and the Headquarters Command for nine subordinate Naval Medical Research and Development laboratories:

- Naval Medical Research Unit No. 3 (NAMRU-3), Cairo, Egypt (with principal field sites in Accra, Ghana and in Kabul, Afghanistan).
- Naval Medical Research Unit No. 2 (NAMRU-2), Jakarta, Indonesia (with principal field sites in Singapore and in Phnom Penh, Cambodia).
- Naval Medical Research Center Detachment (NMRC), Lima, Peru (with a principal field site in Iquitos, Peru).
- Naval Institute for Dental and Biomedical Research (NIDBR), Great Lakes, Illinois.
- Naval Health Research Center (NHRC), San Diego, California.
- Naval Submarine Medical Research Laboratory (NSMRL), Groton, Connecticut.
- Naval Aerospace Medical Research Laboratory (NAMRL), Pensacola, Florida.
- Naval Directed Energy Biological Effects Laboratory (DEBL), San Antonio, Texas.
- Naval Environmental Health Effects Laboratory (EHEL), Dayton, Ohio.



The Daniel K. Inouye Building, home of NMRC and of the Walter Reed Army Institute of Research, in Silver Spring, Maryland.

NMR&D also has a Medical Liaison Officer at the World Health Organization in Geneva, Switzerland.



**Figure 2. Naval Medical Research and Development Enterprise**

The Commanding Officer (CO) of NMRC is also the Director of Naval Medical Research and Development, and in this capacity assumes the roles and responsibilities formerly exercised by the Bureau of Medicine and Surgery (BUMED). The diverse capabilities and geographical distribution of the ten NMR&D laboratories reflect the broad mission and vision of Naval



**NMRC's Commanding Officer with a visiting officer from the German Navy Medical Corps.**

Medical Research and Development. On any given day researchers at our OCONUS labs in Egypt, Indonesia, and Peru may be working with host national government collaborators to assess the threat of emerging infectious diseases. CONUS lab researchers may be evaluating methods to mitigate the effects of stressful physiological or psychological environments on human health and performance. Other CONUS investigators may be conducting human or animal trials of experimental vaccines, blood substitutes, or clot acceleration products. Our work, though clearly operationally focused, is held in highest esteem by the US and international scientific community. Hundreds of presentations, publications, and patent applications are submitted and accepted each year; our work is frequently featured in the

world's leading peer-reviewed scientific journals and international conferences. Coordination, evaluation, and resourcing of such diverse efforts calls for effective, but flexible, planning for the mission and vision to be realized. This is particularly true when one considers that NRM&D is



not a direct Navy-funded enterprise. It receives the vast majority of its funding on a competitive basis, reimbursed from various sources both within and external to the Department of Defense. Less than 25 percent of resources required to drive the enterprise are accounted for by programmed funding specifically directed to our research laboratories.

## RESEARCH AREAS

Dedicated to enhancing the health, safety, readiness, and performance of Navy and Marine Corps personnel, the mission of Naval Medical Research and Development is to conduct medical research in a wide range of disciplines. Detailed information on the research areas described below can be found on the NMRC website ([www.nmrc.navy.mil](http://www.nmrc.navy.mil)).

### ***Biological Defense***

NMR&D investigates methods of protecting military personnel in the event of a biological attack and provides testing and analysis services to detect biological hazards ashore and afloat. Our deployable laboratories conducted tests after the September 11th terrorist attacks and 2001 anthrax and 2004 ricin attacks in US Senate buildings and were present at the 2002 Winter Olympics in Salt Lake City.



A Naval Officer tests his M40 gas mask to ensure it fits correctly during equipment checks.

### ***Infectious Diseases***

NMR&D conducts research on diseases that could incapacitate a large number of deployed forces over a short period of time. The main infectious disease targets are malaria, bacterial causes of traveller's diarrhea, dengue fever, avian influenza, and scrub typhus. In most cases, the best approach is the development of efficacious vaccines.

### ***Combat Casualty Care***

This NMR&D research program focuses on ways to enhance the health, safety, performance, and readiness of Navy and Marine Corps personnel. NMR&D is developing new technologies and treatments to protect, resuscitate, and care for combat casualties.



Three US Navy Hospital Corpsmen evacuate a wounded Iraqi soldier during a mass casualty drill held at Camp Ripper, on board Al Asad Air Base.





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## ***Dental and Biomedical Research***

NMR&D researches problems related to oral health, wellness, disease, and injury. Research focuses on developing materials, diagnostic tools, and biometrics to improve the dental health of Navy and Marine Corps personnel.

## ***Directed Energy Bioeffects***

The goal of NMR&D's directed energy biomedical effects research is to understand and manage the risks associated with human exposure to radio frequency, microwave, laser, and low-frequency sources.

## ***Environmental Health***

NMR&D conducts research on the health effects of environmental materials of interest to the Navy and Marine Corps, to determine and characterize toxicity and determine appropriate personnel exposure limits.

## ***Aerospace Medicine***

NMR&D researches spatial orientation, human performance, aeromedical standards, and aviation medicine to enhance the selection, health, safety, and readiness of Navy and Marine Corps aviators.

## ***Undersea Medicine***

NMR&D conducts research in submariner health and safety, disabled submarine survival and escape, diver physiology, underwater bioeffects on divers, long-term effects of living in closed environments, decision making for independent operations, and hearing conservation. Biomedical and clinical research is increasing safety and improving operational capabilities of Explosive Ordnance Detachments, salvage and husbandry divers, Navy SEALs, and Submariners.



Sailors signal they are ready to be hoisted out of the water during search and rescue training.

## ***Tropical Medicine***

NMR&D's overseas labs combine virology, bacteriology, epidemiology, immunology, parasitology, entomology, and clinical medicine into a comprehensive capability to study tropical diseases where they occur.





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### ***C.W. Bill Young Marrow Donor Program***

This program provides support to casualties with marrow toxic injury due to radiation or chemical warfare agents. The program performs laboratory research that supports technology innovations to make highly reliable and cost-effective DNA-based typing for marrow transplants.

### ***Medical Modeling, Simulation, and Mission Support***

NMR&D conducts analyses and develops models to provide medical decision support to operational commanders, medical logisticians, and field medical personnel in order to determine resources required to support combat and peacetime deployments. Forward Care and Expeditionary Medicine logistic requirements are major focus areas of research and development.

### ***Warfighter Performance***

Warfighter performance research includes the measurement, maintenance, restoration, enhancement, and modeling of human performance in military operational environments. NMR&D also conducts testing and evaluation of cutting-edge technologies and practices to rehabilitate injured Warfighters in order to return them to duty, or, if too severely injured, to return as much function as possible.

### ***Epidemiology and Behavioral Sciences***

NMR&D conducts epidemiologic studies of career events and health outcomes in active-duty personnel and dependents. It includes short- and long-term population-based studies of chronic and infectious disease (respiratory and HIV) as well as behavioral intervention studies developed to address issues of concern to the DoD such as musculoskeletal injury prevention, alcohol abuse prevention, smoking cessation, and other lifestyle factors that affect health and performance.



**A surgeon harvests bone marrow from a Sailor who was matched with an anonymous cancer patient through the C.W. Bill Young DoD Marrow Donor Program.**



**Marines patrol fields near Fallujah, Iraq searching for weapons, caches, and insurgents.**



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## SUSTAINING COMPETITIVE ADVANTAGES

NMR&D has demonstrated competitive advantages in the biomedical technology fields in which it competes. Consistent with our Navy's culture, an entrepreneurial spirit pervades our global enterprise and empowers our organization's leaders and scientists to move out in front of issues as they develop. This culture of agility and innovation and our world-class workforce distinguish and enable us to sustain superior performance with leading-edge RDT&E and surveillance efforts. These advantages enable us to reliably create value for Sea Enterprise as we develop focused products that are Naval-unique or have a unique Naval application, and to excel in other areas that are essential to our Navy, Marine Corps, and/or our nation and that can be efficiently addressed by an enterprise that is blessed with an empowering Naval culture. Besides delivering a high return on investment for our sponsors, the benefits of NMR&D's achievements extend beyond DoD personnel and their families to our fellow citizens and to our military and civilian colleagues throughout the world.



**USNS Comfort is anchored off the coast of Puerto Barrios, Guatemala, on 30 June 2007 during a scheduled stop on a four-month humanitarian deployment to Latin America and the Caribbean.**



**A Vehicle-Borne Improvised Explosive Device after exploding on a street outside of the Al Sabah newspaper office in the Wazirya district of Baghdad, Iraq.**

Naval-unique areas include undersea medicine (submarine and diving medicine), expeditionary and shipboard medical care, operational medicine, and maritime support of foreign humanitarian assistance and disaster relief. Submarine medicine encompasses research on disabled submarine rescue operations, including evaluation of escape technologies and training; studies of long-duration closed living environments; evaluation of atmospheric contaminants and of radiological and electromagnetic exposures; and assessment of optimal sleep/rest cycles and of the psychological impacts of long-term deployments.

Many of these research areas also extend to Naval surface operations as well. Although all of the Services, including Special Operations Forces, have personnel who perform diving operations, the Navy is the primary research component for all DoD Diving Medicine research. Diving medical research is composed of studies in the prevention and treatment of decompression illness, hyperbaric oxygen (HBO) therapy, HBO toxicity, thermal stress, and the bioeffects of underwater sound and blast. Naval-unique research in expeditionary, shipboard, and operational medical care includes studies to treat the Marine Corps and Navy combat casualty from the point of injury, through transportation to the medical Sea Base, to stateside definitive care. Shipboard medicine includes studies of medical care delivery on surface and combatant ships and the assessment of Warfighter performance in maritime operations while underway in both current and future platforms.



Our agility and world-class workforce position us to extend our reach to achieve pre-eminence in numerous core research areas. NMR&D recognized early the potential impact of highly pathogenic avian influenza (AI) and of injuries resulting from improvised explosive devices (IEDs), quickly becoming a world leader by developing WHO-recognized, leading-edge diagnostic capabilities for AI and developing and leading a multi-agency, international consortium in blast biophysics and physiology research to tackle the IED threat. Our Biological Defense Research Program has built a solid reputation developing and fielding assays for biological threat agents and rapidly deploying them throughout the Fleet. It is one of only three laboratories in the National Laboratory Response Network and includes a high-speed genomic sequencing center to rapidly sequence biological threat agents in times of crisis. Radiation research performed by NMR&D has transformed the bone marrow donor matching process with



**A syringe is filled with anthrax vaccine as crewmembers aboard the USS Constellation wait their turn in line to receive their vaccinations.**

highly advanced DNA-based procedures, and this same work has greatly improved our nation's preparedness for terrorist threats. By partnering with numerous military and civilian international health institutions, our OCONUS laboratories effectively leverage DoD's infectious disease threat assessment and mitigation investment and contribute directly to the International Cooperation component of our National Maritime Strategy and enhance Theater Security Cooperation initiatives within five COCOMs. This became apparent when NMR&D supported recent DoD responses to high-profile natural disasters in Indonesia and Peru, but valuable international cooperation and collaboration occurs daily as a result of our geographical, situational, cultural, and technical competencies. NMR&D has significantly

advanced vaccine technologies, establishing nucleic acid-based vaccine programs for malaria, dengue, anthrax, plague, and melioidosis, and is a recognized leader in numerous other areas, including transplant medicine, military-relevant directed energy biomedical effects, spatial disorientation, and inhalation toxicology.

In summary, with a legacy of outstanding science, leading-edge innovation, and agility, NMR&D is well positioned to answer the call for world-class, operationally relevant health and medical research in our traditional areas, and even more so to be able to address "the next big thing" of the future!



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## NAVAL MEDICAL RESEARCH AND DEVELOPMENT STRATEGY

Our strategic planning initiative resulted in NMR&D's adoption of the following mission statement, vision statement, and strategies.

### ***Mission Statement***

To conduct health and medical research, development, testing, evaluation, and surveillance to enhance the operational readiness and performance of DoD personnel worldwide.

### ***Vision Statement***

World-class, operationally relevant health and medical research solutions – anytime, anywhere!

### ***Strategic Themes***

Table 2 displays our Core Strategic Theme and Enabling Strategic Themes. Our core theme – creating value as we accomplish our mission and vision – is consistent with the strategies of Navy Medicine, the Navy, and Marine Corps.

**Table 2. Core Strategic Theme and Enabling Strategic Themes**

<b>Core Strategic Theme</b>	
<b>Research (RDT&amp;E) and Surveillance</b>	<ul style="list-style-type: none"><li>• NMR&amp;D will create value (improve readiness and future capability) for Sea Enterprise by conducting relevant human-centered Warfighter RDT&amp;E and identifying and mitigating medical threats to our Warfighters.</li></ul>
<b>Key Result Areas</b>	<ol style="list-style-type: none"><li>1. Naval Aviation Enterprise (NAE)</li><li>2. Naval Surface Warfare Enterprise (SWE)</li><li>3. Naval Undersea Enterprise (USE)</li><li>4. Naval Expeditionary Combat Enterprise (NECE)</li><li>5. US Marine Corps (USMC)</li><li>6. Naval NETWAR/FORCEnet Enterprise (NNFE)</li></ol>
<b>Enabling Strategic Themes</b>	
<b>Resources</b>	<ul style="list-style-type: none"><li>• Diversify and increase sources of funding.</li><li>• Attract, reward, develop, and retain staff of the highest caliber.</li></ul>
<b>Organization</b>	<ul style="list-style-type: none"><li>• Develop an efficient, effective, and adaptable organization.</li></ul>
<b>Best Business Practices</b>	<ul style="list-style-type: none"><li>• Apply Lean Six Sigma principles to implement effective and efficient processes to deliver Customer Value.</li></ul>
<b>Influence</b>	<ul style="list-style-type: none"><li>• Shape the research environment to preserve and enhance our ability to improve the health and safety of our Warfighters.</li></ul>





Given the experiences of DoD personnel in the current battlegrounds of Afghanistan and Iraq, among our highest priority research objectives will be to further enhance Navy Medicine's ability to address the effects of the "signature weapon" of those battlegrounds – blast – especially traumatic brain injury (TBI), as well as to enhance warfighter resilience and improve intervention strategies for operational stress reactions, including Post-Traumatic Stress Disorder (PTSD). We plan to determine the impacts of military and operational stress in high operational tempo (OPTEMPO) and long-duration missions while retaining our focus on improving the health, fitness, and performance of Warfighters in all environments and in all platforms. We aim to achieve significant gains in healing and rehabilitating our wounded warriors and their families: allowing craniofacial implants to be placed more quickly with improved aesthetics and reduced complications; improving limb prosthetic design, functionality, and acceptance; and improving wound healing rates while reducing bacterial infections. These and numerous other research and surveillance objectives, which reflect the diversity and breadth of our various endeavours on behalf of DoD personnel and their families, are focused on creating optimal impact and value for the six components of Sea Enterprise. All these objectives, with recommended future initiatives (as well as goals, measures, milestones, and potential barriers), are detailed in Appendix B.

It is clear that neither we nor our Warfighters can accurately predict all of their future needs, so our list of core strategic objectives, although extensive, is not meant to be comprehensive. We believe that our legacy of scientific excellence, leading-edge innovation, and agility combined with our ability to rapidly detect and respond to the "next big thing" will be sustained and augmented by our five enabling strategic themes in the Joint, post-BRAC world ahead. Objectives for these enabling themes, and their relation to our core strategic theme and to the accomplishment of our mission and vision, are displayed in Figure 3 (the "Strategy Map"). Enabling themes and objectives are detailed further, along with specific initiatives, goals, measures, milestones, and barriers, in Appendix C.

## **EXECUTION OF THE NMR&D STRATEGIC PLAN**

### ***Governance: Ensuring Focus and Relevance***

NMR&D's governance process includes the semiannual review of the Strategic Plan in meetings where the progress of the plan will be discussed and adjustments made as necessary. The Core Team will conduct a review in six months and brief the Lab Commanders on the results. Lab Commanders will also review the plan at their annual meetings. This process:

- Maintains ongoing focus on goals to ensure achievement.
- Ensures ongoing relevance of objectives as opportunities, risks, and experienced-based knowledge evolve.



**NAVY MEDICINE**  
World Class Care...Anytime, Anywhere

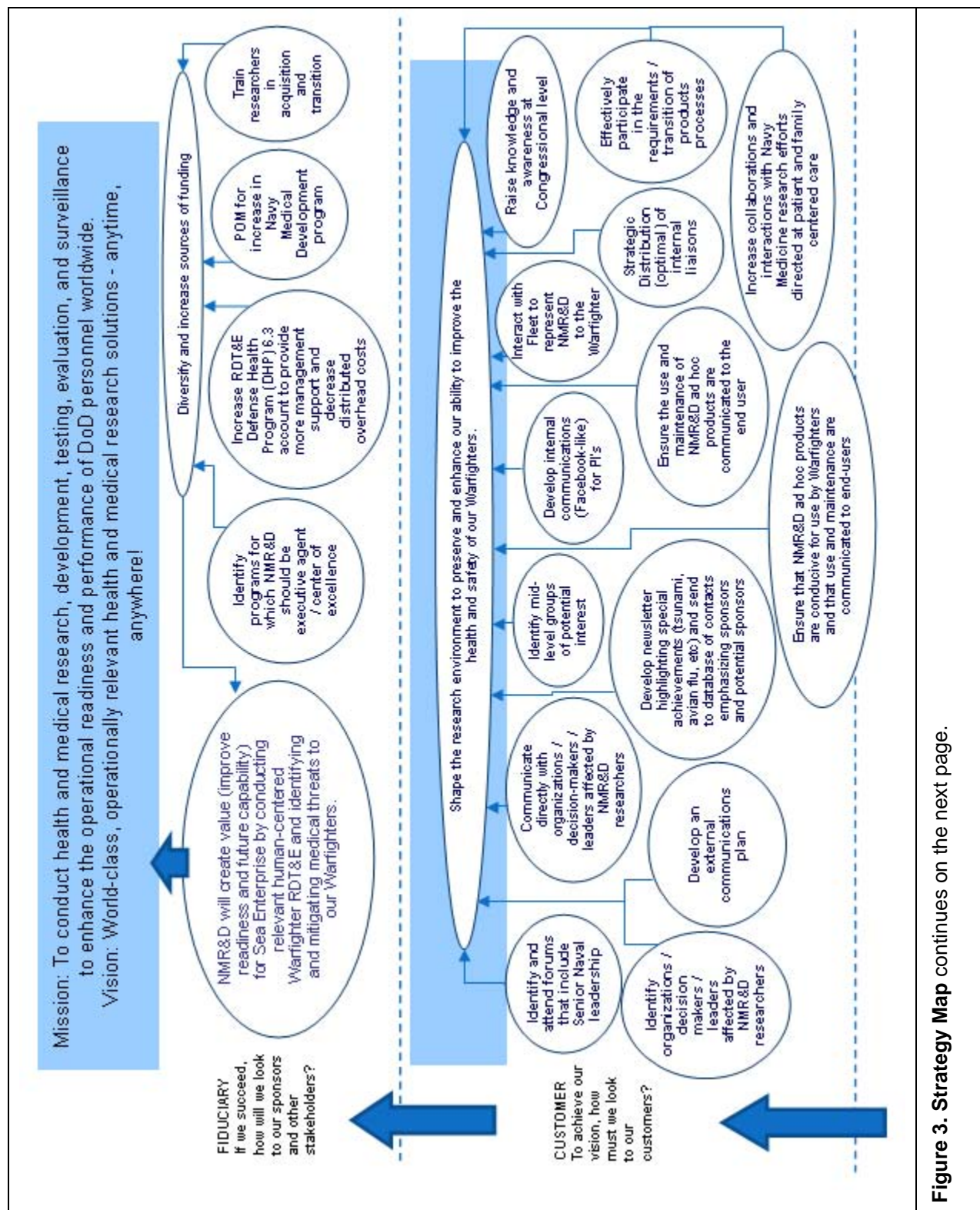
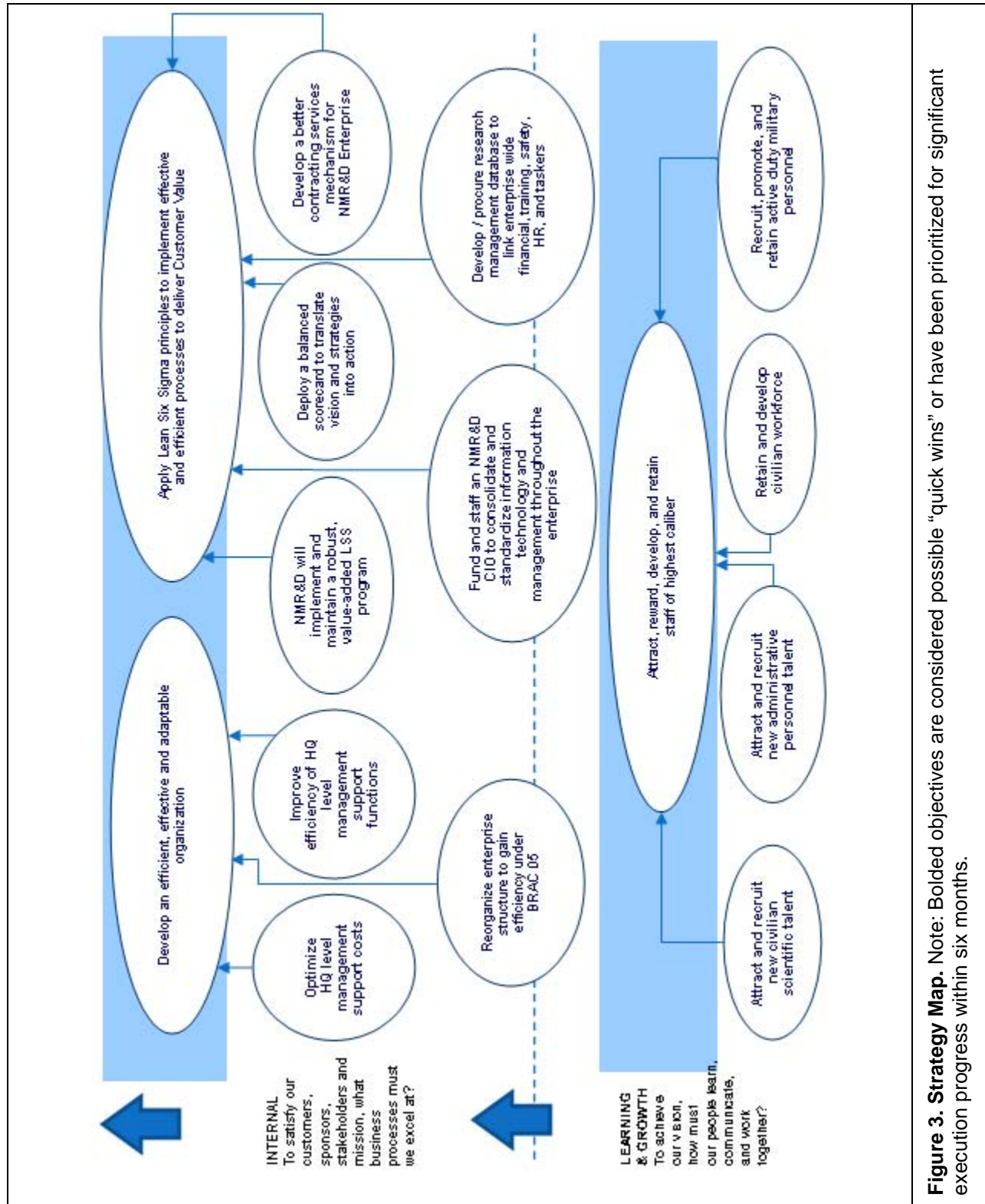


Figure 3. Strategy Map continues on the next page.



**Figure 3. Strategy Map.** Note: Bolded objectives are considered possible “quick wins” or have been prioritized for significant execution progress within six months.





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## ***A Living Document***

NMR&D will implement proactive strategies but retain situational awareness and flexibility. The NMR&D Strategic Plan is a working document that forms a stable framework for action while retaining the flexibility to adapt as objectives are pursued. Content changes to Objectives, Measures, Goals, Barriers, Milestones, and Initiatives are planned to occur during the periodic Core Team and Lab Commander reviews of the Strategic Plan.

## ***Balanced Scorecard***

The balanced scorecard will be used as a management system to clarify the vision and strategies and translate them into action. This will provide feedback around internal organizational processes and external customer and stakeholder outcomes in order to continuously improve strategic performance and results. Metrics derived from the Strategic Objectives, Measures, Goals, Barriers, Milestones, and Initiatives section of this plan and the strategy map will be managed using the balanced scorecard. Measures of success will include metrics that represent key strategic objectives and communicate value to NMR&D leadership and workforce. The scorecard will allow for tracking of the progress of identified goals and objectives by periodically assessing their status.

## ***Execution of the Plan***

Responsibility for each element of the Strategic Plan for action has been assigned. Initiatives for the Core Strategic Theme have laboratories assigned with the primary lab(s) identified. Initiatives for the Enabling Strategic Themes have been assigned individual champions with near-term milestones identified. Progress will be tracked with the balanced scorecard and reviewed at semiannual meetings.

## **CONCLUSION**

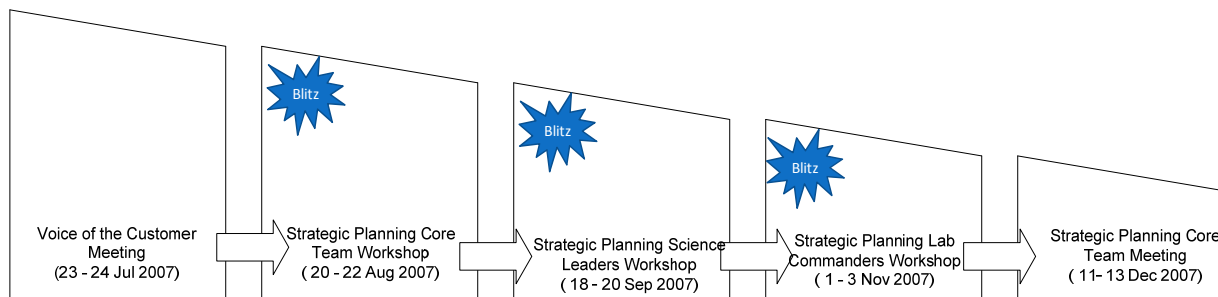
Our Strategic Plan reflects the current guidance and direction of senior civilian and military leadership and aligns NMR&D with Sea Enterprise. The plan, developed using Lean Six Sigma principles, provides strategies, key objectives, and initiatives to enable NMR&D to continue being a premier research organization. NMR&D will remain capable of achieving its mission – health and medical research, development, testing, evaluation, and surveillance to enhance the operational readiness and performance of DoD personnel worldwide – and its vision – world-class, operationally relevant health and medical research solutions anytime, anywhere!





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## APPENDIX A: NMR&D STRATEGIC PLANNING PROCESS



### ***Voice of the Customer Meeting***

The Voice of the Customer (VOC) was provided by attendees representing USN, USMC, other uniformed service, and DoD Warfighters, resource sponsors, and critical stakeholders (Customers). Meeting outputs included customer inputs in terms of current Naval Medical R&D research area relevance, quality, customer service, and future R&D focus. Customer representation at the meeting and responses to customer surveys at the time did not cover all Naval Medical R&D research areas and further customer inputs were sought.

### ***Strategic Planning Core Team Workshop***

Information from the VOC meeting and customer surveys in the form of over 150 statements that expressed key customer needs and actionable items were used. The Core Team also identified about another 40 needs and actionable items. This was the first of the three Blitzes. The Core Team Workshop resulted in a 'straw-man' strategic plan in the form of an outline plan with some content. The draft content included themes, objectives, measures, goals, milestones, initiatives, and actions for four enabling strategic themes.

### ***Strategic Planning Science Leaders Workshop***

The Science Leaders reviewed preceding work, identified some 60 other needs, and received another 25 needs from VOC surveys. This was the second Blitz. Decisions were made to align core strategies with all parts of Sea Enterprise. Available data and information were distilled to draft core strategic themes, objectives, measures, goals, milestones, and initiatives in support of a strategic roadmap for the next three to five years. Additional outputs included core strategies for NMR&D directed to the Surface Warfare, Naval Aviation, Undersea Warfare, Expeditionary Combat and NETWAR/FORCEnet enterprises, and to the Marine Corps. Actions required before the next meeting were identified including information validation and further customer input.



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### ***Strategic Planning Lab Commanders Workshop***

The Lab Commanders Workshop, held at NAVSEA in Philadelphia on 1-3 November 2007, was the third blitz. Lab Commanders reviewed, revised, and validated preceding work. Fifteen new possible customer needs or actionable items from VOC surveys received after the Science Leaders Workshop were dealt with as appropriate. Lab Commanders each provided their Top 3 issues and concerns, which were incorporated, as necessary, in the strategic planning program for action. The pros and cons of the current NMR&D organization structure, management support funding, and officer distribution were examined and actions recommended. New strategic initiatives were identified for the Core Team to review and detail in December. Elements of NMR&D sustaining competitive advantages were outlined that would be further refined for inclusion in the strategic plan. The Lab Commanders reached a consensus on the way ahead, agreeing to champion and lead strategic planning initiatives.

### ***Strategic Planning Core Team Meeting***

Following the Lab Commanders Workshop, the Core Team met in December to review, resolve, or recommend resolutions to any outstanding strategic planning items. The draft NMR&D Strategic Plan was reviewed and edited. Detailed plans for new strategic initiatives identified at the Lab Commanders Workshop and thereafter were completed. The Core Team prioritized the strategic planning program for action initiatives as requested by the Lab Commanders. At this meeting, the Core Team also ensured that all items raised by Customers, Science Leaders, and Lab Commanders were appropriately addressed prior to completion of the Strategic Planning Initiative.



## APPENDIX B: CORE STRATEGIC OBJECTIVES, MEASURES, GOALS, BARRIERS, MILESTONES, AND INITIATIVES

<b>Core Strategic Theme:</b> Navy Medical RDT&E will create value (improve readiness and future capability) for Sea Enterprise by conducting relevant human-centered Warfighter R&D and identifying and mitigating medical threats to our Warfighters.							
Objectives	Measures	Goals	Barriers	Milestones	Initiatives	Sea Enterprise	Research Areas
Improve health and fitness and Warfighter performance (all environmental, and all platforms)	Improved resistance to fatigue, combat stress, extreme environments	1) Develop tests / guidelines aimed at improving human performance 2) Develop and deliver performance enhancing products equipment and procedures	Natural physical and emotional factors. Establishment of funded, ongoing program	Development of a laboratory at NHRC that has a stable funding base	Development of laboratory, to be completed 2nd qtr FY08, coverage in Blast Injury POM by USAMRMC	NAE, SWE, USE, NECE, USMC, NFFE	HPO, CCC
Determine the impacts of military and operational stress in high OPTEMPO and long-duration missions	1) Decreased stress-related illnesses treated at Navy medical facilities 2) Decreased % of military in non-deployable status due to stress-related causes 3) Resilience training / procedures developed	Develop methods to enhance performance in high-stress environments	Agreed upon measures of stress impact; obtaining field data; lack of qualified personnel (psychologist, psychiatrist)	1) Deploy 2 researchers to the field (1 year) 2) Identify measures of stress impact (2 years) 3) Identify recovery measures	1) Send qualified personnel to field settings (IA) 2) Contact Navy Reserves; collaborate with Navy hospitals	NAE, SWE, USE, NECE, USMC	BS, CCC, HPO
Understand cognitive, psychomotor, behavioral, physiological factors that influence individual performance	1) Operational effectiveness scores (training and operation) 2) Incorporation of results into system design and operational procedures	1) Develop tests and guidelines aimed at improving human performance 2) Develop and deliver performance enhancing products / equipment and procedures	1) Time 2) Personnel	1) Identification of high payoff research areas (1 year) 2) Coordinated research program across labs (year 2) 3) Impact on system design/training (year 5)	1) Set up cross laboratory program team 2) Develop program plan 3) Collaborate with universities and other DoD labs	NAE, SWE, USE, NECE, USMC	HPO, BS

### Legend:

**Sea Enterprise:** Naval Aviation Enterprise (NAE), Naval Surface Warfare Enterprise (SWE), Naval Undersea Enterprise (USE), Naval Expeditionary Combat Enterprise (NECE), US Marine Corps (USMC), Naval NETWORK/ FORCENet Enterprise (NFFE)

**Research Areas:** Biological Defense (BD), Infectious Diseases (ID), Combat Casualty Care (CCC), Dental and Biomedical Research (DBR), Directed Energy Bioeffects (DE), Environmental Health(EH), Aerospace Medicine (AM), Undersea Medicine (UM), Tropical Medicine (TM), C.W. Bill Young Marrow Donor Program (MDP), Behavioral Science and Epidemiology (BS), Medical Modeling and Simulation (MS), Human Performance Optimization (HPO)

**Labs:** Naval Medical Research Center (NMRC), Naval Medical Research Unit No. 3 (NAMRU-3), Naval Medical Research Unit No. 2 (NAMRU-2), Naval Medical Research Center Detachment (NMRC-D), Naval Institute for Dental and Biomedical Research (NIDBR), Naval Health Research Center (NHRC), Navy Submarine Medical Research Laboratory (NSMRL), Navy Aerospace Medical Research Laboratory (NAMRL), Navy Directed Energy Biological Effects Laboratory (DEBL), Navy Environmental Health Effects Laboratory (EHLE)

**Note:** Labs in Bold are the primary labs for a given objective



Objectives	Measures	Goals	Barriers	Milestones	Initiatives	Sea Enterprise	Research Areas	Labs
Place craniofacial implants more quickly, with improved aesthetics, and with reduced infection rates and toxic reactions	1) Percent decrease in time to implant placement 2) Percent decrease in anaesthetic outcomes 3) Percent decrease in infections requiring surgery 4) Percent decrease in requirement for systemic antibiotics	1) Decrease time to first implant 50% 2) Decrease rate of anaesthetic outcomes 90% 3) Decrease rate of infections requiring surgery 80% 4) Decrease need for systemic antibiotics 50%	1) Availability of an operational forces craniofacial database 2) Insufficient funding support 3) No line sponsor for pre-deployment processing 5) BRAC 6) Unreliable Congressional funding	1) In 12 months acquire equipment database proof of principle 2) In 18 months encapsulate antibiotics 3) In 24 months adjust antibiotic coating system for appropriate time release 4) In 36 months evaluate prototype titanium implant	1) Obtain operational military support for effort 2) Secure funding for required equipment 3) Secure full funding for nanoparticle system 4) Acquire technology for CAD/CAM titanium implant fabrication 5) Transition project to NAMRU-San Antonio	NECE, USMC	DBR, CCC	NIDBR, NMRC
Improve limb prosthetic design, functionality, and acceptance	1) Pain reduction 2) Gait improvement 3) Return of function 4) Return to duty criteria	1) Pain reduced to allow normal gait 2) Percent of normal gait restored, determined via gait analysis 3) Percent of full function restored 4) Criteria for return to duty established	Funding required for new initiative in this area – approx \$1.5M for equipment and staff annually for \$1M	Center of Excellence established 6 months after receipt of funding; products delivered in all four areas within 2 years of establishment.	1) Solicit / establish R&D Center of Excellence, which would collaborate with leading institutions in the field in research to improve prosthetic design.	NECE, USMC	HPO, CCC	NHRC
Increase rate of wound healing with and without bacterial infection	1) Wound closure rate 2) Number of surgical washouts	25% increase in rate of health with or without infection	1) Rate of healing can't be improved 2) Lack of knowledge of wound environment	1) Elucidate wound environment 2) Identify factors that increase or decrease wound healing	1) Test drugs	NAE, SWE, USE, NECE, USMC, NNFE	CCC, ID, DB	NMRC, NIDBR
Diagnose, prevent, treat blast trauma, with emphasis on mild TBI	1) Natural history of blast TBI 2) T/E treatment prevention of blast trauma	50% decrease in blast trauma (TBI)	1) Adequate resources (\$, people) 2) Appropriate animal model 3) Detection sensitivity	1) Submit proposal to sponsoring agencies 2) Participate in blast - injury POM	1) Create department for TBI (ramp up) 2) Create collaborations with university / government agencies	NAE, SWE, USE, NECE, USMC, NNFE	CCC, UM, DB, BS	NHRC, NMRC, NSMRL, NIDBR, DEBL





Objectives	Measures	Goals	Barriers	Milestones	Initiatives	Sea Enterprise	Research Areas	Labs
Identify predisposing factors and prevention strategies for operational stress reactions, to include PTSD	Identification of several predisposing factors and intervention strategies	Improve prediction accuracy of factors to 70%	Lack of 'political' support in lieu of treatment, other issues	Show cost of ignoring the problem in next 2 years	Demonstrate effectiveness of early identification of predisposing factors plus intervention and preventive strategies	NECE, USMC	BS, HPO	NHRC
Expand usage of current BW agent assays to include both detection and diagnostics	Number of assays FDA-approved	1) Obtain FDA approval for top 8 BW agent assays 2) Ensure availability of assays in the field	1) Currently no funding available for FDA approval of assays 2) No formal GLP / quality program established at NMRC 3) Lack of knowledge of FDA approval process	1) Improve knowledge of FDA approval process (6-12 months) 2) Funding source identified (12 months) 3) Obtain funding for FDA approval of BW assays (3 years)	1) Meet with individuals at NMRC and WRAIR with experience in FDA approval process; Meet with FDA 2) Identify funding sources for effort 3) Initiate process to obtain funding	SWE, NECE, USE, USMC	BD, ID	NMRC
Improve international capabilities to detect and prevent emerging infectious disease	Number of new countries in which surveillance and response programs are established	Two new countries per year	1) Political situation in host country 2) Availability of qualified personnel and facilities in host country 3) Sufficient funding support	1) In one year, establish new professional relationships in two countries 2) In 24 months, initiate new surveillance and response projects in two new countries	Investigate Georgia and Afghanistan as host countries	NECE, USMC	ID, TM	NAMRU-2, MAMRU-3, NMRC
Improve ability to collect and transmit Disease and Non-Battle Injury (DNBI), as well as Combat Trauma Registry (CTR) data, from the field	Development of comprehensive database useful for DNBI and CTR reporting, surveillance and research	TMIP (Theater Medical Information Program) includes all data elements needed to accomplish this objective	TMIP-J, program of medical data collection, controls requirements and equipment; if no theater data system is in place that can collect specific data elements, an interim solution can be approved by TMIP and used	All CTR / DNBI data fields in TMIP-J data collection requirements, before CTR / DNBI interim solution data collection procedure ends (6 months)	Provide TMIP functional requirement and equipment specification to allow collection and reporting of information important to CTR and DNBI reporting and research	NAE, SWE, USE, NECE, USMC, NNFE	BS, MS, CCC	NHRC



Objectives	Measures	Goals	Barriers	Milestones	Initiatives	Sea Enterprise	Research Areas	Labs
Understand long-term effects of closed environment living	1) Percent of submariners participating in epidemiological survey 2a) Metrics for distinguishing submarine specific medical issues 2b) Comparison of incidents associated with submariners to other Navy personnel and general population 2c) Relationship of psychological incidents to SUBSCREEN 3a) Number of boats that have atmosphere measured 3b) Relationship of atmosphere measures to illness incidents	1) 70% in 1 year; 90% in 3 years 2) Collected semi-annually 3) 40% in 1 year; 80% in 3 years	1) Participation reluctance 2) On board data "goodness," no program in place or planned 3) Fleet asset support, funding, ability to develop database	1) 6 months brief Fleet 2) 1 year 80% of IDC briefed 3) 6 months - COMSUBFOR directive, database completed in 1 year	1) Marketing material; prepare; deliver 2) Identify program sponsor(s), IDC education 3) TYCOM medical officer support; Collate civilian and Navy information	USE	UM	NSMRL, NMRC
Reduce occurrence and effect of DCS	1) Develop non-recompressive therapy for DCS 2) Measure effects of gas mixtures on DCS 3) Develop objective measure of severity of DCS 4) Characterize risk parameters of divers for DCS	1) Reduce DCS effects in 85% of treated cases 2) % reduction in cases (normalized by diving stress) 3) Improved classification system in 2 years; objective test in 3 years 4) Initial in 3 years; final in 5 years	Medical, not a research priority	1 year - 80% of responders trained	Educate treatment professionals	NAE, USE, USMC	UM, AM	NSMRL, NMRC, NAMRL



Objectives	Measures	Goals	Barriers	Milestones	Initiatives	Sea Enterprise	Research Areas	Labs
Develop treatment for internal hemorrhage (homeostasis)	Number of products evaluated in preclinical and clinical studies	20% decrease in loss of life due to internal hemorrhage	1) Lack appropriate animal model 2) Technical difficulty (closed space) 3) Blunt trauma - not standardized 4) Technical difficulty of externally applied hemostat agents	1) Obtain multiple agents to test 2) T / E agents / techniques in appropriate animal model	1) Develop standard animal model 2) Test array of proposed solutions	NAE, SWE, USE, NECE, USMC, NNFE	CCC	NMRC
Develop stable (temp) resuscitation fluid and drug delivery system to increase survivability on the battlefield	Increase survival in animal pre-clinical human clinical trials	25% decrease in mortality due to inadequate resuscitation shock	1) Technical difficulty 2) Difficulty of human trauma trials (FDA)	1) T / E candidate resuscitative fluids in pre-clinical animal models 2) Work with FDA	1) Obtain new material solution 2) Attempt consented human trials	NAE, SWE, USE, NECE, USMC	CCC	NMRC
Provide timely appropriate treatment to casualties through development of improved M/S	Number of M / S tested for proven validity on trauma cases in the Navy/Marine Corps Combat Trauma Registry	M / S technique to predict patterns of injury in emergent conflicts	Availability of necessary data fields from TMIP database	Improve TMIP database utility for research	Incorporate datafields needed for trauma research into the TMIP database	NECE, USMC	MS, CCC, BS	NHRC
Provide guidance on medical logistics matters to operational commanders	Time lag to specify supply, casualty evacuation, asset configuration solutions	Real-time modeling and simulation capability	Lack of support from operational community; technical challenge; casualty stream changes	Initiate within 1 year; complete within 4 years	Market concepts to sponsors and end users; identify GCCS - M, FORCE-NET opportunities; develop real-time casualty stream; determination using TMDS, other sources	NECE, USMC	MS, BS	NHRC
Provide guidance on safe nonlethal weapons (NLW) exposure parameters, include prevention and treatment strategies	Time required for parameter specification	Specifications prior to Milestone B of system development plan	Political sensitivity to LW or NLW; staff	Continue interactions with JNLWD	Market early R&D on safety to Acquisition; create coordinating group for inter-laboratory coordination	NAE, SWE, USE, NECE, USMC	DE, UM, AM	DEBL, NSMRL, NAMRL



Objectives	Measures	Goals	Barriers	Milestones	Initiatives	Sea Enterprise	Research Areas	Labs
Develop 'biomarkers' as toxic response to chemical exposures (jet fuel, emerging contaminants, including tungsten alloys, and other heavy metals)	1) Ability to monitor immunologic, neurologic, and genotoxic, and other systemic toxicity 2) Provide biomarkers facility and prevent toxicity	Provide distinctive capabilities to address health issues of military occupational exposures to test materials mentioned	1) Lack of funding 2) Low staff (working) 3) IACUC long process 4) ID VOCs and respective POCs 5) ID emerging issues for Warfighters 6) ISSA / MOU approval process	1) Funding source identified 2) New staff hired 3) Processes created / improved, collaborations implemented 4) 50% of this work achieved by 2 years from start date	1) Look for funding 2) Hire new staff 3) Create an expedited process for IACUC approval; coordinate a simpler process for special agreements 4) Set up a mechanism to measure the uptake of toxic chemicals and EC, measure war-related stress-associated factor, and serve as the cornerstone of a preventive strategy 5) Publish manuscripts and technical reports	NAE, SWE, USE, NECE, USMC	BD, ID, CCC, DE, EH, AM, UM, BS, HP, DBR	NMRC, NHRC, EHEL, NIDBR
Determine whether inhaled sand particles, nanomaterials, or any toxic chemicals contribute to respiratory infection and other systemic complaints among US troops deployed in Gulf War regions	Identification and characterization of pathogens	Provide unique capabilities to address occupational and deployment exposure-induced health issues	1) Acquisition of sand samples to analyze is difficult 2) Animal use protocol approval for nanotechnology is challenging 3) Low technical expertise	Identification and characterization of pathogens of airway inflammation due to exposures to Iraqi sand particulate matter (PM) (2 years)	1) Locate several sectors to acquire sand materials 2) Consult with EPA or NIOSH, others 3) Provide results for epidemiological, risk assessment / management 4) Resolve animal use to restrictions to facilitate protocol approval	NECE, USMC	EH	EHEL





Objectives	Measures	Goals	Barriers	Milestones	Initiatives	Sea Enterprise	Research Areas	Labs
<b>Develop diagnostic biomarkers and systems identification for detection of exposure to specific toxins</b>	1) Identify biomarker profiles for known toxic agents and identified pathological outcomes measures 2) Identify multi-use biomarkers 3) Develop systems approach to refine identification of specific toxic profiles	Deploy field or hospital biomarker assay profiles of known and suspected toxic agents	Availability of funding for personnel with experience/ training	Obtain funding to identify specific biomarkers and biomarker profiles to known toxic agents	Determine funding sponsors for DoD; expand collaboration with Army / AF; develop biomarker and biomarker systems approach capability	NAE, SWE, USE, NECE, USMC	BD, ID, CCC, DE, EH, AM, UM, BS, HP, DBR	NMRC, NHRC, EHEL, NIDBR
<b>Expand / re-establish neuro-psychology program</b>	Establish formal requirement; Identify funding	Well-funded and well-qualified team is established	Fragmentation of clinicians and researchers; requirement is not established	Increase coordination between clinicians and researchers; designate point person / organization; consolidate multiple projects into larger program	Set up meeting in San Diego with potential sponsor(s)	NAE, SWE, USE, NECE, USMC, NNFE	HPO, CCC	NHRC
<b>Determine safe operating parameters for directed energy systems</b>	Reduce injuries by 20%	Develop a manual that provides guidance for the medical management of combat DE injuries	1) Lack of funding 2) No contracting / granting authority; marketing; lack of contacts	1) In 6 months, identify 3 new potential funding sources 2) 1 year submit 2 proposals 3) 1 year attend 3 conferences	1) Write proposals 2) Attend conferences 3) Identify new funding sources	NAE, SWE, NECE, USE, USMC	DE, CCC, BS, MS, UM	DEBL, NMSRL, NMRC, NHRC, NAMRL





## APPENDIX C: ENABLING STRATEGIC THEMES, OBJECTIVES, MEASURES, GOALS, BARRIERS, MILESTONES, AND INITIATIVES

Resources: Diversify and increase sources of funding.						
Objectives	Measures	Goals	Barriers	Milestones	Initiatives	
Increase RDT&E Defense Health Program (DHP) 6.3 account to provide more management support and decrease distributed overhead costs	Percentage of fixed costs met	100% of fixed costs	1) Limited financial resources from BUMED 2) No identified offsets	Program Objective Memorandum (POM) for FY10-15	Identify elements that belong in the POM	
POM for increase in Navy Medical Development program	Percentage of increased funding	100% of POM	1) No identified offsets 2) Limited R&D, Navy financial resources	Program Objective Memorandum (POM) for FY10-15	Align POM request with established requirements	
Identify programs for which NMR&D should be executive agent/center of excellence	Number of programs for which NMR&D is an executive agent	Become executive agent for 1 additional program	Minimal infrastructure for execution	Get 1 new executive agency within 2 years	Identify a program that NMR&D should be executive agent / center of excellence	
Train researchers in acquisition and transition	Percent of researchers acquisition trained	30% trained first year, 75% second year, 90% third year	Limited assigned resources (personnel; funding)	Form a medical R&D transition assist team by end of FY08	Form team, draft charter; identify fiscal requirement and source	



<b>Resources:</b> <b>Attract, reward, develop, and retain staff of highest caliber.</b>						
Objectives	Measures	Goals	Barriers	Milestones	Initiatives	
Attract and recruit new civilian scientific talent	Fill rate of available science positions	Ensure vacancies remain less than 10%	1) Less competitive compensation packages and inability to guarantee job security 2) Negative perception of government / military service 3) Perception of bureaucracy / regulatory constraints 4) Requirement for US citizenship for GS employment	By 6-12 months, collect baseline data of vacancies and retention rates	1) Develop exit interview to obtain data regarding work environment 2) Continue active participation in the Science and Engineering Apprentices Program (SEAP), College Quality Leaders (CQL) program and student training rotations enterprise wide 3) Expand recruitment at career fairs, conferences, and events 4) Fully implement the National Research Council Fellowship program	
Recruit, promote, and retain active duty military personnel	1) Retention rate after initial tour 2) Promotion rate 3) Score of pre / post questionnaire administered to Navy Medical Department on awareness of R&D	1) Maintain 75% of first tour members 2) Equivalent to Navy's rates 3) 90% increased awareness	1a) Concern about frequent relocation, deployment, and war 1b) Negative perception of government / military service 2) Availability of positions for promotion	1) Start tracking retention on active duty by end of FY08 2) Strive to equivalent rates of Navy in 3-5 years 3) Questionnaire within 1 year then annually for Navy Med	1a) Coordinate with specialty leaders and career planners to promote awareness and uniqueness of Research and Development careers 1b) Advocate to NMSC and SG for research career track for military officers 2) Advocate changing policy to designate R&D OCONUS lab tours a deployment or equivalent of operational tour 3) Develop exit interview to obtain data regarding work environment	
Attract and recruit new administrative personnel	Fill rate of available administrative positions	Ensure vacancies less than 10%	1) Less competitive compensation packages and inability to guarantee job security 2) Negative perception of government / military service 3) Requirement for US citizenship for GS employment	By 6-12 months, collect baseline data of vacancies and retention rates	1) Develop exit interview to obtain data regarding work environment 2) Expand recruitment at career fairs, conferences, and events	
Retain and develop civilian workforce	Retention rate	TBA	Limited advancement / promotion opportunities	By 6-12 months, collect baseline data of attrition rates	1) Develop exit interview to obtain data regarding work environment 2) Look for benchmarks 3) Expand awards program to motivate retention	





<b>Organization:</b> <b>Develop an efficient, effective, and adaptable organization.</b>						
Objectives	Measures	Goals	Barriers	Milestones	Initiatives	
Improve efficiency of HQ level management support functions	Reduce administrative routing time	Reduce administrative routing time by 50%	IM/IT Support to enact automation	1) Conduct baseline (6 months) 2) Implement automation (12 months)	1) Conduct baseline of current function 2) Implement automation of processes as appropriate	
Optimize HQ level management support costs	Percent reduction	Reduce overhead costs and management support costs by 10% of FY08 levels	1) Institutional recalcitrance and resistance 2) Authorized Manning Document (AMD)	Submit an efficiency plan for CO approval (6 months)	Form an IPT to explore efficiencies	
Reorganize enterprise structure to gain efficiency under BRAC 05	Obtain CNO approval on OPNAV instruction 5450	CNO Approval	Bureaucracy in the approval process	Submit 5450 in time for Oct 09 implementation	Draft 5450 with justification	



<b>Best Business Practices:</b> <b>Apply Lean Six Sigma principles to implement effective and efficient processes to deliver Customer Value.</b>						
Objectives	Measures	Goals	Barriers	Milestones	Initiatives	
NMR&D will implement and maintain a robust, value-added LSS program	1) Number of green belts 2) % senior leaders trained as champions 3) ROI and / or significant added value provided via LSS tools/projects 4) Number of black belts	1) At least 2 current GBs per lab; more for NMRC and NHRC 2) 100% of Directors, DHs, Ogs, and GS15s 3) ROI sufficient to pay for % of HQ level mgt support costs 4) One or more black belts	1) Green belt courses generally not offered OCONUS 2) Champion courses generally not offered OCONUS 3) Culture; resistance to change; desire to check a box vs. to truly obtain value 4) Limited BB support at local lab level (until experience, expertise and confidence develop)	1) 1 per lab within 6 months; 2 by 18 months 2) 50% at each lab within 6 months; 100% by 1 yr 3a) Complete by Jan 08 3b) Implement by Jan 08 3c) Implemented by beginning of FY09 4) Begin training in Mar; report to NMRC by end of FY08	1) At least one course per year conducted at an NMR&D Laboratory 2) At least one course per year conducted at an NMR&D Laboratory 3a) Develop enterprise high level VSM and use it to seek opportunities for LSS projects 3b) Each lab to develop a selection, monitoring, and review process for LSS opportunities and projects 3c) Incorporate LSS tools into planning for BRAC moves 4) Full time BB/Strategic Business Advisor identified and begin work at NMR&D HQ	
Develop a better contracting services mechanism for NMR&D	Number of contracting mechanisms in place	One contracting mechanism in place	Finding willing DoD contracting agency	Contracting mechanism in place (6 months)	1) Work with NMLC to provide contracting services 2) Investigate other potential DoD contracting agencies	
Fund and staff an NMR&D CIO to consolidate and standardize information technology and management throughout the enterprise	Number of CIO	One CIO	1) Cost 2) Recruiting the right individual	CIO on board (6 months)	Hire a CIO	
Develop / procure research management database to link enterprise wide financial, training, safety, HR, and taskers	ROI on database implementation and use	Three year payback time	1) Legacy systems 2) Undefined or un-standardized data elements 3) Information assurance 4) Access issues 5) Initial investment costs	1) Business plan complete (12 months) 2) IM/IT system implemented (24 months)	1) Draft business plan 2) Implement IM/IT system	
Deploy a balanced scorecard to translate vision and strategies into action	Metrics representing key strategic objectives	1) Clarify and translate vision and strategies into action 2) Communicate value to leadership and workforce	1) Availability of relevant data 2) Collection and presentation of relevant data	1) Translate vision and strategy into a coherent set of measures achievement of goals (6 months) 2) Regularly review status of metrics and take necessary actions (9 months)	1) Translate vision and strategy into a coherent set of measures to enable achievement of goals 2) Track progress of all key strategic objectives	



<b>Influence:</b> <b>Shape the research environment to preserve and enhance our ability to improve the health and safety of our Warfighters.</b> <b>Communications / Marketing</b>						
Objectives	Measures	Goals	Barriers	Milestones	Initiatives	
Develop an external communications plan	1) Articles published (informational / scientific), number of DVDs, etc. 2) Periodic coordinated Navy Medicine R&D message for SG use	1) TBA instances of feedback and unsolicited contacts 2) At least one message prepared every 6 months	1a) Lack of Funding (internal / external) 1b) Limited expertise 2) Ability to collect information	1a) Funding / expertise on board (3 months) 1b) Plan approved by NMR&D BOD / NMSC 1c) Initial media submissions (6 months) 1d) Recipients identified (6 months) (1 year) 2) Initial message sent to SG (9 months)	1a) Assign resources to gather NMR&D subjects / inputs / abstracts 1b) Provide resources to develop plan 1c) Consider obtaining Public Affairs Officer services 2) Use CIP representative to gather information	
Identify and attend forums that include Senior Naval leadership	Contact hours times number of stars	25 star-hours per quarter	Cost and time to attend	1) Initial attendance / feedback form (6 month recurring) 2) Recurring meetings (yearly)	1) Layout and decide annual schedule (60 days) 2) Define Navy R&D message (90 days) 3) Identify forums and get invitations 4) Define Message (elevator pitch) 5) Brochure, DVD, and tri-folds are in work	
Identify organizations / decision-makers / leaders affected by NMR &D researchers	Database of contacts	Continual growth of database (e.g., 10% per quarter)	Database input data sources fragmented	Database operational (6 months)	Collect data from command-wide – initial database created at the December 2007 Core Team Meeting – to include stakeholders, sponsors and Warfighters	
Identify mid-level groups of potential interest	Number of groups identified and contacted	Growth of database to include mid-level people	Fragmented nature of mid-level groups	1) Receipt of Standard Navy Distribution List (SNDL) (3 months) 2) Sending communications to groups identified (12 months)	Populate database of mid-level groups	



<b>Influence:</b> Shape the research environment to preserve and enhance our ability to improve the health and safety of our Warfighters. Communications / Marketing (continued)					
Objectives	Measures	Goals	Barriers	Milestones	Initiatives
Develop newsletter highlighting special achievements (tsunami, avian flu, etc) and send to database of contacts emphasizing sponsors and potential sponsors	Number of recipients of newsletter; amount of feedback	Ratio of feedback to recipients	Definition of the target audience	Integrate into Communication Plan (6 months)	1) Collect OCONUS data and input to Communication Plan 2) Estimate cost and time to produce
Develop internal communications (Facebook-like) for Pls	Number of hits per month; number of postings	Increase knowledge of research within NMR&D by increasing postings and hits	1) Reluctance to participate 2) Lack of expertise in technology	1) Identify expertise in-house (2 months) 2) System up and running (6 months)	1) Identify expertise in-house 2) System up and running
Ensure that NMR&D ad hoc products are conducive for use by Warfighters and that use and maintenance are communicated to end users	1) Number of Program Trouble Reports (PTR) from end user 2) Increased customer feedback	1) Attain a continual reduction in PTR 2) Develop a process to ensure Fleet input at all levels of RDT&E	1) Incomplete knowledge of pipeline 2) BUMED culture; lack of direct Fleet contact	1) Training pipeline components identified (6 months); Training pipeline sends students to courses at appropriate times (12 months) 2) Increased participation in Fleet exercises and Fleet meetings (12 months)	1) Assign personnel to identify and communicate with pipeline 2) Establish NMR&D working group to ensure participation in appropriate Fleet exercises and meetings
Communicate directly with organizations / decision-makers / leaders affected by NMR&D researchers	1) Number of letters, memos, emails, phone calls per quarter 2) % of organizations / decision-makers / leaders contacted	Communicate directly with 40% or more each year	Cost and time to contact and to develop specialized message	1) Data collection complete (2 months) 2a) Message (120 days) 2b) 20% of database contacted (1 year) 2c) 40% of database contacted (2 years)	1) Assign database IT person 2) Assign message definition (various)





**NAVY MEDICINE**  
World Class Care...Anytime, Anywhere



<b>Influence:</b> <b>Shape the research environment to preserve and enhance our ability to improve the health and safety of our Warfighters.</b> <b>Representation</b>					
Objectives	Measures	Goals	Barriers	Milestones	Initiatives
Increase collaborations and interactions with Navy Medicine research efforts directed at patient and family-centered care	Number of Collaborative projects with clinical investigators at Military Treatment Facilities (MTFs)	Increased representation of NMR&D in Navy Medicine research projects	Multiple ethical and regulatory reviews delay project initiation; Lack of adequate funding and trained personnel assigned to MTF study site	Identify Clinical Investigations Program (CIP) Representative (3 months); Identify 1-2 new projects in the MTFs at NMIC, NMCP, NIMCSD or appropriate location (36 months)	Assign representative to Navy Medicine Clinical Investigations Program (CIP) director
Raise knowledge and awareness at Congressional level	Number of Legislative Liaison hours	10 hours per quarter	1) There may be a perception of conflict of interest 2) Be sure that chain of command is fully aware of any interactions	1) Conduct review in 6-12 months 2) Quantify education efforts annually	1) Participate in FY09 Staffer Days (Feb / Mar / Apr) 2) Formally designate NMR&D legislative liaison
Effectively participate in the requirements / transition of products processes	1) Return on investment on participation in high value processes 2) Amount of participation in specified high value processes	TBA	Lack of medical requirements process that is coordinated with the Fleet	Chart the existing requirement generating processes relevant to NMR&D (3 months)	1) Chart the existing requirement generating processes relevant to NMR&D 2a) Identify points in the processes that NMR&D can effectively influence 2b) Identify number of processes that are important to NMR&D
Strategically distribute our internal liaisons	Level of completion of assessment and reassignment	1) Assess distribution of liaisons and re-assign as needed 2) Obtain maximum value to NMR&D from detailees	Potential lack of interest in the organization to have a liaison (ONR)	Immediate (6 months)	1) Undertake review of distribution 2) Set expectations for periodic communications (liaisons / organ)
Interact with Fleet to represent NMR&D to the Warfighter	Increased number of SME liaisons	One in each SEA Enterprise (NAE, SWE, USE, NECE, NNFE; and USMC)	Lack of cooperation (support) for the commands (willingness) (lack of buy-in)	1) In 1 year to have 50% represented 2) In 2 years to have 100% represented	1) Make designation via Type Commanders (TYCOMS) 2) Report their needs (use the VOC survey) 3) Ongoing VOC network 4) Set up a secure blog





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## APPENDIX D: LIST OF ACRONYMS/ABBREVIATIONS

AF	Air Force
AI	Avian Influenza
AM	Aerospace Medicine
AMD	Authorized Manning Document
BB	Black Belt
BD	Biological Defense
BOD	Board of Directors
BRAC	Base Realignment and Closure
BSE	Behavioral Science and Epidemiology
BUMED	Bureau of Medicine and Surgery (US Navy)
BW	Biological Warfare
CAD/CAM	Computer-Aided Design/Computer-Aided Manufacturing
CAPT	Captain, US Navy
CCC	Combat Casualty Care
CDC	Centers for Disease Control and Prevention
CIO	Chief Information Officer
CIP	Clinical Investigations Program
CNO	Chief of Naval Operations
CO	Commanding Officer
COCOM	Combatant Command
COMSUBFOR	Commander, Naval Submarine Forces
CONUS	Continental United States
CQL	College Quality Leaders
DBR	Dental and Biomedical Research
DC	Dental Corps
DCS	Decompression Sickness
DE	Directed Energy
DEBL	Directed Energy Bioeffects Laboratory
DH	Department Head
DHP	Defense Health Program
DNA	Deoxyribonucleic acid
DoD	Department of Defense
DVD	Digital Video Disk or Digital Versatile Disc
EC	Environmental Compliance
EH	Environmental Health



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EHEL	Environmental Health Effects Laboratory
EPA	Environmental Protection Agency
FDA	Food and Drug Administration
FORCEnet	US Navy enterprise network
FY	Fiscal Year
GB	Green Belt
GCCS – M	Global Command and Control System – Maritime
GLP	Good Laboratory Practices
GS	Government Service
HBO	Hyperbaric Oxygen
HIV	Human Immunodeficiency Virus
HPO	Human Performance Optimization
HQ	Headquarters
HR	Human Resources
IA	Information Assurance
IACUC	Institutional Animal Care and Use Committee
ID	Infectious Diseases
ID	Identify
IED	Improvised Explosive Device
IDC	Independent Duty Corpsman
IM/IT	Information Management/Information Technology
ISSA	Inter-Service Support Agreement
IT	Information Technology
JNLWD	Joint Non-Lethal Weapons Directorate
LSS	Lean Six Sigma
LW	Lethal Weapon
M/S	Modeling and Simulation
MC	Medical Corps
MDP	C.W. Bill Young Marrow Donor Program
MOU	Memorandum of Understanding
MS	Medical Modeling and Simulation
MSC	Medical Service Corps
MTF	Military Treatment Facility
NAE	Naval Aviation Enterprise
NAMRL	Naval Aerospace Medical Research Laboratory





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NAMRU-2	Naval Medical Research Unit No. 2
NAMRU-3	Naval Medical Research Unit No. 3
NAVMED	Naval Medical Command
NAVSEA	Naval Sea Systems Command
NECE	Naval Expeditionary Combat Enterprise
NETWARCOM	Naval Network Warfare Command
NHRC	Naval Health Research Center
NIDBR	Naval Institute for Dental and Biomedical Research
NIH	National Institutes of Health
NIOSH	National Institute for Occupational Safety and Health
NLW	Non Lethal Weapon
NMCP	Naval Medical Center Portsmouth (VA)
NMCSD	Naval Medical Center San Diego (CA)
NMLC	Naval Medical Logistics Command
NMR&D	Naval Medical Research and Development
NMRC	Naval Medical Research Center
NMRCD	Naval Medical Research Center Detachment
NMSC	Navy Medicine Support Command
NNFE	Naval NETWAR/FORCEnet Enterprise
NNMC	National Naval Medical Center (Bethesda, MD)
NSMRL	Naval Submarine Medical Research Laboratory
OCONUS	Outside the Continental United States
ONR	Office of Naval Research
OPTEMPO	Operational Tempo
OPNAV	Office of the Chief of Naval Operations
PI	Principal Investigator
POC	Point of Contact
POM	Program Objective Memorandum
PM	Particulate Matter
PTR	Program Trouble Reports
PTSD	Post-Traumatic Stress Disorder
R&D	Research and Development
RDT&E	Research, Development, Testing and Evaluation
ROI	Return on Investment
SEAL	Sea Air and Land
SEAP	Science and Engineering Apprentice Program
SG	Naval Surgeon General
SNDL	Standard Navy Distribution List



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SWE	Naval Surface Warfare Enterprise
SWOT	Strengths Weaknesses Opportunities Threats
T/E	Test and Evaluation
TBA	To be announced
TBI	Traumatic Brain Injury
TM	Tropical Medicine
TMIP	Theater Medical Information Program
TMIP-J	Theater Medical Information Program – Joint
TR	Technical Report
TYCOMS	Type Commanders
UM	Undersea Medicine
USAMRMC	US Army Medical Research and Materiel Command
USE	Undersea Enterprise
USMC	US Marine Corps
USN	US Navy
VOC	Voice of the Customer
VSM	Value Stream Map
WHO	World Health Organization
WRAIR	Walter Reed Army Institute of Research



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## APPENDIX E: LIST OF REFERENCES

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